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THE

ONTARIO WATER RESOURCES

COMMISSION

REPORT ON

WATER POLLUTION SURVEY

TOWN OF GEORGETOWN

1963

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REPORT ON

WATER POLLUTION SURVEY

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DEPARTMENT OF MUNICIPAL AFFAIRS
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BY

ONTARIO WATER RESOURCES COMMISSION

September 1963

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INDEX

INTRODUCTION

The purpose of this survey was to locate and record all significant sources of water pollution within the Corporation of the Town of Georgetown.

Surveys of this nature are conducted routinely and upon request throughout the Province by the Ontario Water Resources Commission as a basis for evaluating any existing or potential sources of pollution.

When sources of pollution are found or reported, corrective measures are recommended. The Commission has set objectives for water quality which are expected to be attained. In difficult situations, the laboratory and research services of the OWRC are used to determine a satisfactory remedy.

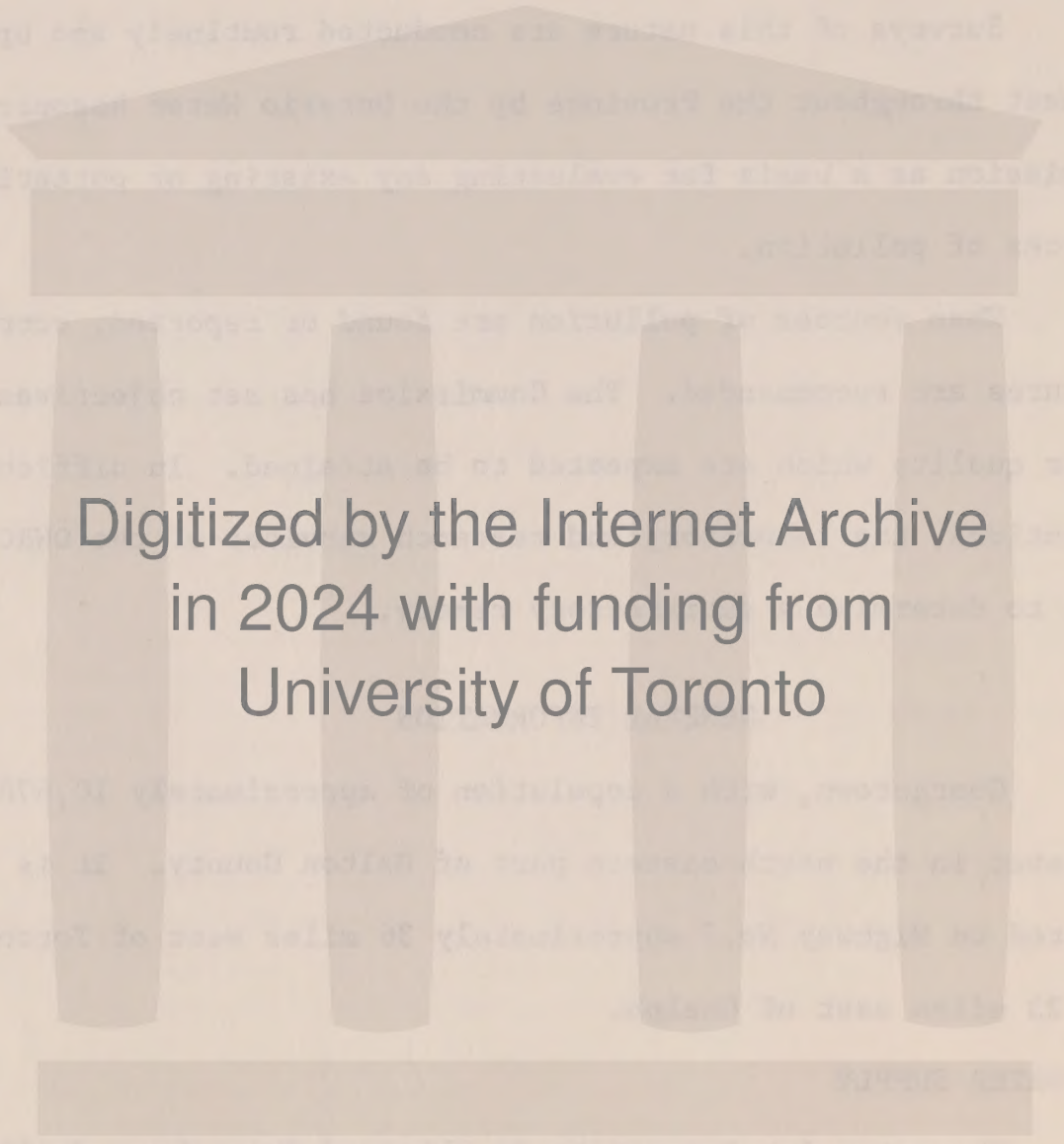
GENERAL INFORMATION

Georgetown, with a population of approximately 10,678, is situated in the north-eastern part of Halton County. It is located on Highway No.7 approximately 36 miles west of Toronto and 23 miles east of Guelph.

A. WATER SUPPLY

The water for Georgetown is obtained from three drilled wells which discharge to a 500,000-gallon reinforced concrete ground reservoir at the high lift pumphouse.

Chemical treatment consists of chlorination of the combined flows at the main pumphouse mainly to control the growth of iron bacteria in the distribution system.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Sodium Hexametaphosphate(Calgon) is applied to the water from two of the wells to prevent the precipitation of iron in the distribution system.

B. DRAINAGE

Georgetown lies entirely within the Credit River Watershed and drainage for the town is provided mainly by Silver Creek. The latter rises north-west of Georgetown traversing the town in a south-easterly course to its confluence with the Credit River downstream at Norval.

C. SEWER SYSTEM

The developed portion of Georgetown with the exception of the Ann Street and River Drive areas is served with sanitary sewers.

Storm sewers are provided for only portions of the municipality with the remaining sections relying on open ditches to handle storm waters.

SEWAGE TREATMENT FACILITIES

The sewage from Georgetown is treated at a modern activated sludge water pollution control plant, the construction of which was commenced in April of 1959. Operation of the plant under the supervision of the Division of Plant Operations(OWRC) began in April of 1961.

The treatment works are located along the east bank of Silver Creek at the south-easterly extremity of the town. For reference, brief details of the plant are presented as follows:

Placed in Operation - 1961
Design Flow - 1.5 mgd

Treatment - Comminution, grit removal, primary sedimentation, aeration, final sedimentation, sludge digestion (2-stage), chlorination(year-around).

Receiving Stream - Silver Creek

Flow and Treatment Data

1962	Average daily flow	mgd	0.963
	Maximum daily flow (during week of Nov.4-10)	mgd	2.925
	Minimum daily flow (during week of Sept.2-8)	mgd	0.619
1963 (Jan.1-July31)	Average daily flow	mgd	0.991
	Maximum daily flow (during week of March 24-30)	mgd	2.283
	Minimum daily flow (during week of June 20-26)	mgd	0.588
	Avg.5-day BOD of final effluent	ppm	19.7
	Avg.suspended solids of final effluent	ppm	19.0
	Avg. BOD reduction	%	84.5
	Avg. suspended solids removal	%	88.2

COMMENTS

While the Georgetown Water Pollution Control Plant produced a reasonably good effluent as shown by the results of the samples collected, the average BOD and suspended solids contents of the effluent for the first half of 1963 were slightly higher than is normally expected with this type of treatment.

An experiment was conducted at this plant from November 1962 through to June 1963 by the Purification Branch of the Commission.

A "Simcar Aerator" unit was tested and during this period loadings were purposely fluctuated in order to evaluate the equipment under varying conditions. Consequently, normal treatment processes were altered during the special tests and these interruptions resulted in lower performance efficiencies by this plant.

ANALYSES OF SAMPLES

The laboratory results of the bacteriological examination and chemical analyses of the samples collected from the Credit River and its tributaries traversing Georgetown and from the sewer outlets discharging a dry weather flow are presented in Table 1 which is appended to this report.

All these examinations and tests were performed at the Ontario Water Resources Commission laboratory in Toronto.

SIGNIFICANCE OF LABORATORY RESULTS

The OWRC objectives for surface waters in Ontario are listed as follows:

5-day BOD - not greater than 4 ppm.
MF coliform count - not greater than 2,400 coliform organisms per 100 ml.

Phenolic Equivalents -
Average - not greater than 2 ppb.
Maximum - not greater than 5 ppb.

pH Range - 6.7 - 8.5

Some pertinent maximum allowable concentrations limits of contaminants in storm sewer, sewage treatment plant, and

industrial waste discharges are listed below. Adequate protection for surface waters, except in certain specific instances influenced by local conditions, should be afforded providing the following concentrations and pH range are not exceeded:

5-day BOD - not greater than 15 ppm.
Suspended solids - not greater than 15 ppm.
Phenolic equivalents - not greater than 20 ppb.
Ether solubles(oil) - not greater than 15 ppm.
pH Range - 5.5 - 10.6

While the chemical analyses and bacteriological examination of many of the samples collected from the Credit River and Silver Creek in the vicinity of Georgetown did meet the Commission's objectives, the analyses of several samples did exceed the objective maximums.

In general, deterioration of the quality of the water was more pronounced downstream from the point of industrial waste discharges.

WATER IMPAIRMENT

A. INDUSTRIAL WASTES

The most significant pollution conditions requiring attention in Georgetown are listed as follows:

(1) Provincial Paper Limited

The manufacturing process at Provincial Paper Limited involves the coating of paper rolls from the company's Thorold mill with various combinations of fillers, sizes, and pigments. The coatings, made up in an aqueous medium, are applied to the

paper rolls which are then dried, pressure rolled, and cut into sheets.

The wastes from this operation consists primarily of wash waters, which result from washing down of holding tanks, machines, and floors following completion of a run with one type of coating. Concentrated wastes, from the occasional off specification coating mixture that have to be discarded, and any excess coating mixtures remaining after completion of an order, are discharged to separate tanks and trucked to a land disposal area owned and operated by the company.

The wastes from clean-up operations are collected in a holding tank of approximately 6,000 gallon capacity that is kept agitated to prevent settling. This sewage tank feeds a 3,700 gallon, 10 foot diameter, Infilco "Cyclator" unit. Flocculation chemicals are added as solutions to the line leading to this upflow clarifier by automatic control.

Collected sludge from the "Cyclator" unit is pumped to a dewatering or secondary settling tank for further concentration. This sludge containing approximately 25 percent solids is trucked away for land disposal. The overflow from the "Cyclator" unit and the decanted supernatant from the dewatering tank are discharged to Silver Creek. Waste flows average 15,000 to 20,000 gallons per day.

COMMENTS

The variable nature and characteristics exhibited by the wastes being fed to the "Cyclator" unit make it almost impossible for the solids to be removed with uniform efficiency and consequently poorly treated effluents are periodically discharged to Silver Creek. However, it does appear from previous limited sampling programmes, that the wastes are adequately pre-treated for discharge to the Georgetown sewerage system.

The recommendation that the industry seek a connection to the town sewers has been made in previous Commission reports on this industry. This still appears to be the most feasible way of eliminating the direct discharge of inadequately treated wastes to Silver Creek providing that the town and industry reach an agreement on the costs of combined treatment and that a new sewer service to the industry is provided to handle the increased flow of industrial wastes.

(2) Smith and Stone Limited

This company is engaged in the manufacture of a wide variety of ceramics, plastic products, and electrical devices. The basic raw materials are clays, plastics in pellet and granular form, and sheet metal.

Products produced include plastic pipes and bottles, pottery, and plastic coated wire.

Water consumption averages 400,000 gpd nearly all of which is used in the plastics division of the plant for cooling of injection, compression, and blow moulding machines.

Two small flows of contaminated waste result from wash-up operations in the ceramics division where enamels are sprayed on certain products and from rinse water in an acid bright dipping operation used for small stamped metal parts.

The enamel wastes are settled in a series of three sumps prior to discharge, while water usage in the dipping operation is so small in relation to the total plant flow that no problems with regard to low pH should arise.

All plant wastes discharge via a company and town storm sewer system to Silver Creek.

Sanitary wastes from the 600 employees are discharged to the town sanitary sewers.

COMMENTS

While the laboratory results of a single sample of the effluent did not indicate any significant contamination, the suspended solids content slightly exceeded the Commission's objective.

(3) Domtar Pulp & Paper Limited
Howard Smith Papers - Georgetown Mill

Operations at this plant involve the finishing of fine paper products through the application of clays, pigments, etc., to raw paper stock brought in in rolls. Water consumption averages 20,000 gpd.

Two pond systems receive the total plant waste which is made up primarily of waste waters from machines and equipment which are washed after the application of a specific finish. The strength and volume of the waste varies widely throughout the day; but, at one time or another,the waste contains all of the components used in the finishes. This covers,in addition to clays and pigments, materials such as starch, casein, and latex. Alum is added to wastes to improve the settling characteristics in the ponds.

The company has recently improved the operation of these ponds by diverting run-off away from them and increasing their depth. In addition, wastes high in solids have been segregated from the plant discharge and are being trucked away for disposal in the town dump. These measures have eliminated for the present any direct discharge to the Credit River from these ponds. However, the odourous conditions which have created objections in the past were again a problem this summer.

On previous occasions, the plant management has stated that Domtar Pulp and Paper Limited, is desirous of making use of the town sewerage system for final disposal of the plant wastes. They recognize that pre-treatment of the wastes at the industry to reduce BOD and suspended solids levels in the waste will be necessary and are hopeful that the improved lagoon system will fulfill this function.

Serious drawbacks to the use of any lagoon system for pre-treatment prior to discharge to a sewerage system include:

(i) The build-up of solids in the ponds which progressively reduce the retention period offered the wastes.

(ii) Winter conditions of ice and snow which bring about reduced algal growth and lead to increased waste flows.

(iii)The objectionable odour problems which arise each summer during the warm months of July and August.

COMMENTS

The present system of disposal is now being evaluated by sampling programmes being conducted by the industry and the Commission's Industrial Waste Branch. These results will be weighed against the objections outlined above and a decision reached on whether or not other recognized solids removal equipment should be installed at the industry.

B. REFUSE DISPOSAL

Garbage and refuse collected locally is disposed of on land located along the south-west bank of the Credit River in Georgetown.

The land is owned by the municipality but the landfill project is operated for the town by a contractor who is required to collect and dispose of the garbage.

All ashes, garbage and other refuse collected is deposited as directed by the town engineer on grounds approved by the local health authorities.

As previously indicated, the landfill site is bordered on one side by the Credit River. A split in the river channel opposite the dumping grounds results in one branch running parallel to the base of a steep bank at the edge of the landfill site.

Some time prior to the fall of 1962, refuse such as bales of paper, wooden crates, old tires and other discarded material had inadvertently been dumped or bulldozed over the bank of the dumping grounds into the diverted branch of the river previously mentioned.

Recently, an attempt has been made by the municipality to correct the aforementioned situation by covering the bulk of the material in the water with clean fill. Both ends of the diverted channel remain open.

A number of 45-gallon oil drums and wooden crates, two bales of paper, two discarded refrigerators, one washing machine, and other debris remain uncovered in the upper and lower ends of the channel.

COMMENTS

While the municipality has endeavoured to correct the condition described, foreign material still remains in a diverted branch of the Credit River. Whether the corrective measures taken to date will prove successful will depend largely on the

amount of water entering the diverted section of the river. The channel was relatively dry upstream from the covered refuse on September 6, 1963, but it contained backwash water downstream from the filled section.

Although it is the intention of Council that this site be operated as a sanitary landfill project, normal landfill practices are not regularly employed here. A large accumulation of uncovered garbage and refuse was noted on a number of occasions and no landfill procedures were in effect.

Action is required at this site to prevent it from becoming a major source of pollution. The uncovered refuse in the diverted channel of the Credit River should be removed and closer supervision maintained insofar as the actual operation and maintenance of the site is concerned.

C. INDISCRIMINATE DUMPING

In the past, Silver Creek has been abused by the indiscriminate deposition of refuse along its banks particularly immediately upstream and downstream from Guelph Street in Georgetown.

An accumulation of empty oil cans, tires, cardboard, empty paint cans, and wood debris was noted along the banks of the creek. Some of this material was observed in the water.

While the wood debris may have reached the stream accidentally during storm and/or flood periods, the other foreign material is the result of deliberate indiscretion.

Until approximately one year ago, it was common practice to dump used crank-case oil into Silver Creek from two service stations. These are situated near the intersection of Guelph Street and Silver Creek. The waste oil from these premises is now collected and hauled away.

To correct the conditions just mentioned, action is necessary involving the following premises:

(i) Harley Motors(Shell Service Station)
31 John Street West,
Georgetown
Proprietor - Mr.G.Harley

The dumping of garage waste such as empty oil cans, old tires, cardboard, etc., along the bank of the creek adjacent to this property should be discontinued.

Action should also be taken to remove any of this material from the creek itself and the banks of the watercourse and to dispose of this rubbish so that there will be no further pollution.

(ii) Murray's Chevrolet-Oldsmobile(B.A.Service Station)
61 Guelph Street,
Georgetown
Lessee - Mr.A.Murray
Owner - Mr.A.Scott
Scotts Cars,
Guelph Street,
Georgetown

The east bank of Silver Creek bordering this property was discoloured with oil which had reportedly been dumped over the bank for a number of years.

There was evidence of oil wastes seeping into the creek from the bank.

Mr.Murray, the present lessee, stated that since he has leased the premises all oil wastes originating from the garage have been stored and subsequently hauled away.

Mr.Scott, the owner and previous occupant of the premises, agreed to consider remedial measures relative to this matter.

Action is required to prevent the further discharge of oily wastes from the bank into the creek. Also, the oil cans should be removed from the base of the bank.

(iii) Fred's Auto Body
42 Guelph Street,
Georgetown
Proprietor - Mr.F.Tolton

Empty paint cans, old tires, and scrap metal originating from these premises have been piled adjacent to the bank of Silver Creek. Some of this discarded material was noted in the water.

It is essential that no further depositing of this material near the creek be permitted.

The material just mentioned should be removed from the watercourse itself and from the side of the stream and it is necessary that this material be disposed of, or stored so that it will not affect a watercourse.

SUMMARY

The Town of Georgetown is served by a modern water pollution control plant which is capable of producing a good effluent.

Despite the provision of modern sewage disposal facilities, pollution problems exist within the municipality.

The most significant potential and/or actual sources of pollution originate from local industries. The problems associated with the treatment of wastes from two of the industries are outstanding and these industries in conjunction with the Commission are endeavouring to work out satisfactory arrangements for the treatment and disposal of these wastes.

Both the Credit River and its tributary Silver Creek have been abused by indiscriminate deposition of refuse along their banks. This applies to the Credit River adjacent to the Georgetown refuse disposal site and Silver Creek particularly upstream and downstream from Guelph Street.

RECOMMENDATIONS

A. Provincial Paper Limited and Domtar Pulp and Paper Limited should improve their waste treatment facilities to meet the Commission's objectives for discharge to a watercourse or treat their respective wastes to a degree acceptable for entry into the municipal sanitary sewers.

B. The selection, construction and operation of sanitary landfill sites with possible discharge to local waters should be performed in a manner to prevent these from discharging either liquid or solid material into adjacent watercourses.

C. Steps should be taken by the management of Harley Motors and Fred's Auto Body, and Mr.A.Scott the previous occupant and

present owner of the B.A. service station premises, to prevent waste material, both in liquid and solid form, from gaining access to Silver Creek. The material that is in the water from these premises should be removed.

D. The wood debris and other discarded material lying in the bed of Silver Creek, particularly immediately upstream and downstream from Guelph Street, should be removed from the water itself. The municipality should consider undertaking this project in the public interest.

All of which is respectfully submitted,

District Engineer: _____
P.G.Cockburn, P.Eng.

Approved by: _____
K.H.Sharpe, Director

ds

TABLE 1-1

ALL ANALYSES EXCEPT PH REPORTED IN PPM
UNLESS OTHERWISE INDICATED

OUTFALL TABULATION AND ANALYTICAL RESULTS

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML M.P.N.	COLIFORMS PER 100 ML M.F.	5-DAY B.O.D.	SOLIDS TOTAL	SOLIDS SUSP.	SOLIDS DISS.	TURBIDITY	PHENOLS (PPB)
CR-21.4	CREDIT RIVER AT HWY. NO. 7 -NORVAL (ESQUESING TWP.)	SEPT. 14/61		<10	2.0	308	--	--	6	--
		JUNE 7/62		180	2.8	328	--	--	16	--
		JAN. 29/63		5,900	3.5	344	--	--	5.5	0.0
		FEB. 20/63		11,000	5.8	330	--	--	6.0	--
		MAY 1/63		23,000	2.2	324	51	273	--	2
		SEPT. 6/63		42	1.8	304	5	299	--	3
CRS-21.9	SILVER CREEK AT HWY. NO. 7 -NORVAL (ESQUESING)	SEPT. 14/61		84,000	4.6	460	--	--	3	--
		JUNE 7/62		4,000	1.5	504	--	--	6.5	--
		JAN. 29/63		9,700	5.2	474	--	--	4.0	--
		FEB. 20/63		85,000	5.5	454	--	--	5.0	--
		MAY 1/63		5,000	2.9	344	21	323	--	5
		MAY 7/63 *	43	--	--	--	--	--	--	--
		MAY 14/63*		140	--	--	--	--	--	--
		JUNE 4/63*		1,700	--	--	--	--	--	--
		JULY 3/63*		24,000	--	--	--	--	--	--
		AUG. 13/63*		5,800	--	--	--	--	--	--
		SEPT. 5/63		460	2.3	552	15	537	--	0

* SAMPLES COLLECTED BY GEORGETOWN WPCP OPERATOR.

TABLE 1-2

OUTFALL TABULATION AND ANALYTICAL RESULTS

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML I.N.	COLIFORMS PER 100 ML M.F.	5-DAY B.O.D.	SOLIDS TOTAL	SOLIDS SUSP.	SOLIDS DISS.	TURBIDITY
CRS-22.5	SILVER CREEK -	MAY 7 /63*		6	-	-	-	-	-
	200 YARDS DOWNSTREAM	MAY 14/63*		42	-	-	-	-	-
	FROM GEORGETOWN WATER	JUNE 4/63*		40	-	-	-	-	-
	POLLUTION CONTROL PLANT	JULY 3/63*		3,700	-	-	-	-	-
	(WPCP) OUTLET	AUG.13/63*		10,800	-	-	-	-	-
		SEPT.5/63		310	1.3	604	43	561	-
CRS-22.6 T	GEORGETOWN	SEPT.13/61		20	12	558	26	532	-
	WPCP	JUNE 7/62		30	3.2	588	5	583	-
	OUTLET	SEPT.11/62		6	1.4	600	6	594	-
		SEPT.5/63		51	2.4	686	7	679	-
CRS-22.7	SILVER CREEK -	MAY 7/63*		118	-	-	-	-	-
	200 YARDS UPSTREAM	MAY 14/63*		188	-	-	-	-	-
	FROM GEORGETOWN	JUNE 4/63*		88	-	-	-	-	-
	WPCP OUTLET	JULY 3/63*		18,900	-	-	-	-	-
		AUG.13/63*		5,200	-	-	-	-	-
		SEPT.5/63		330	2.6	604	21	583	-

TABLE 1-3

OUTFALL TABULATION AND ANALYTICAL RESULTS

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML		5-DAY	SOLIDS			TURBID-	PHENOLS
			I.N.	M.F.	B.O.D.	TOTAL	SUSP.	DISS.	ITY	(PPB)
CRS-23.1	SILVER CREEK AT 9TH LINE	MAY 7/63*		110	-	-	-	-	-	
		MAY 14/63*		176	-	-	-	-	-	
		JUNE 4/63*		76	-	-	-	-	-	
		JULY 3/63*		12,000,000	-	-	-	-	-	
		AUG.13/63*		6,300	-	-	-	-	-	
CRS-24.2	SILVER CREEK AT BEND ADJACENT TO MAIN ST. S. GEORGETOWN	SEPT.13/61		470	1.6	466	-	-	2	
		JUNE 7/62		1,300	1.8	458	-	-	2.0	
		SEPT.5/63		540	1.6	604	9	595	-	
CRSB-24.7	BLACK CREEK AT MAIN ST. S. GEORGETOWN	SEPT.13/61		16,000	1.6	480	-	-	1	
		JUNE 7/62		390	2.1	520	-	-	2.5	
		FEB.20/63		236	3.4	302	-	-	2.9	
		MAY 1/63		900	1.9	372	7	365	-	5
		SEPT.5/63		670	1.5	604	7	597	-	0

TABLE I-4

OUTFALL TABULATION AND ANALYTICAL RESULTS

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML I.N.	COLIFORMS PER 100 ML M.F.	5-DAY B.O.D.	SOLIDS TOTAL	SOLIDS SUSP.	SOLIDS DISS.	TURBID-ITY
CRSB-24.9 W	18 " ϕ STORM SEWER - MARKET ST.	SEPT.6/63		NO DRY WEATHER FLOW					
CRS-24.5 W	36" ϕ STORM SEWER - TERRY COURT	SEPT.5/63		NO DRY WEATHER FLOW					
CRS-24.8 W	18" ϕ STORM SEWER OFF MAIN ST.S.	SEPT.5/63		FLOW INSUFFICIENT FOR SAMPLING					
CRS-24.8 W-2	12" ϕ STORM SEWER OFF MAIN ST.S.	SEPT.5/63		NO DRY WEATHER FLOW					

TABLE 1-5

OUTFALL TABULATION AND ANALYTICAL RESULTS

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML I.N.	COLIFORMS PER 100 ML M.F.	5-DAY B.O.D.	SOLIDS TOTAL	SOLIDS SUSP.	SOLIDS DISS.	TURBIDITY
CRS-24.9	SILVER CREEK AT MAPLE AVENUE	SEPT.18/61		400	2.6	378	-	-	3
		JUNE 7/62		19,000	1.8	366	-	-	20
		FEB.20/63		28	3.9	364	-	-	13.5
		SEPT.5/63		40,000	2.0	364	8	356	-
CRS-24.9 W	12" ϕ STORM SEWER - MAPLE AVE.	SEPT.5/63		NO DRY WEATHER FLOW					
CRST-25.2	TRIBUTARY TO SILVER CREEK JUST DOWNSTREAM FROM GUELPH ST. BRIDGE	SEPT.5/63		49,000	3.1	376	5	371	-
CRS-25.2	SILVER CREEK AT GUELPH ST.	SEPT.5/63		4,700	4.4	404	42	362	-

TABLE 1-6

OUTFALL TABULATION AND ANALYTICAL RESULTS

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML I.N.	COLIFORMS PER 100 ML M.F.	5-DAY B.O.D.	SOLIDS TOTAL	SOLIDS SUSP.	SOLIDS DISS.	TURBIDITY	PHENOLS (PPB)
CRS-25.2 W	12" ϕ STORM SEWER S.W. SIDE OF GUELPH ST. BRIDGE	SEPT.5/63		NO DRY WEATHER FLOW						
CRS-25.2 W-2	10" ϕ STORM SEWER - S.E. SIDE OF GUELPH ST. BRIDGE	SEPT.5/63		NO DRY WEATHER FLOW						
CRS-25.2 W-3	8" ϕ STORM SEWER - N.W. SIDE OF GUELPH ST. BRIDGE	SEPT.5/63		NO DRY WEATHER FLOW						
CRS-25.4	SILVER CREEK AT JOHN ST. W.	SEPT.13/61		30	2.4	340	26	314	-	-
		JUNE 7/62		650	4.3	358	-	-	23	-
		SEPT.11/62		6,000	24.0	636	208	428	-	-
		MAY 1/63		4,000	1.8	338	38	300	-	6
		SEPT.5/63		200	4.0	452	30	422	-	-

TABLE I-7

OUTFALL TABULATION AND ANALYTICAL RESULTS

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML		5-DAY	SOLIDS			TURBID-	PHENOLS
			I.N.	M.F.	B.O.D.	TOTAL	SUSP.	DISS.	ITY	(PPB)
CRS-25.4 W	10" STORM SEWER AT JOHN ST. W.	SEPT.5/63	NO DRY WEATHER FLOW							
CRS-25.5 I	12" X 14" BOX DRAIN OUTLET - PROVINCIAL PAPER LTD.	SEPT.13/61	-	119,000	31	696	116	580	-	-
		JUNE 7/62	-	3,800	110	1274	706	568	-	-
		SEPT.11/62	-	170,000	1,000	8330	6410	1920	-	-
		FEB.19/63	-	-	26	-	89	-	-	-
		SEPT.5/63	-	1,800,000	275	1662	252	1410	-	40
CRS-25.5	SILVER CREEK OPPOSITE JOHN ST. E. JUST UPSTREAM FROM PROVINCIAL PAPER LTD. OUTLET	SEPT.13/61		0	0.7	330	-	-	4.0	
		JUNE 7/62		590	0.7	362	-	-	9.0	
		SEPT.11/62		2,900	1.2	352	-	-	3.1	
		SEPT.5/63		< 10	1.3	382	8	374	-	

TABLE 1-8

OUTFALL TABULATION AND ANALYTICAL RESULTS

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML I.N.	COLIFORMS PER 100 ML M.F.	5-DAY B.O.D.	SOLIDS TOTAL	SOLIDS SUSP.	SOLIDS DISS.	TURBIDITY	PHENOLS (PPB)	PH	IRON
CRS-25.5 W	21" ϕ STORM SEWER - JOHN ST. E.	SEPT.5/63		NO FLOW NOTED								
CRS-25.7 IW	21" ϕ INDUSTRIAL SEWER - SMITH & STONE LTD.	SEPT.4/63		0	2.4	468	17	451		8	7.2	6.50
CRS-26.1	SILVER CREEK AT ANN ST. BRIDGE	SEPT.5/63		630	0.8	356	15	341	-	8		

TABLE 1-9

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML I.N.	COLIFORMS PER 100 ML M.F.	5-DAY B.O.D.	SOLIDS TOTAL	SOLIDS SUSP.	SOLIDS DISS.	TURBIDITY	PHENOLS (PPB)	PH	NICKEL	COPPER
CRD-24.0	CREDIT RIVER DIVERSION BELOW GEORGETOWN REFUSE DISPOSAL SITE	OCT.4/62		-	4.4	362	-	-	5	10	7.7		
		SEPT.6/63		1,200	3.9	306	10	296	-	12			
CR-24.3	CREDIT RIVER DOWNSTREAM FROM HOWARD SMITH PAPERS OUTLET	SEPT.13/61		210	4.0	270	26	244	-	-			
		JUNE 7/62		6,000	4.4	400	88	312	-	-			
		AUG.1/62		790	2.4	336	-	-	14	-			
		SEPT.11/62		4,900	40	524	180	344	-	-			
		JAN.8/63		1,180	7.4	-	-	-	-	-			
		FEB.19/63		-	4.6	-	-	-	-	4			
		SEPT.6/63		100	1.3	296	6	290	-	-			
CR-24.4 1	INDUSTRIAL OUTLET - HOWARD SMITH PAPERS	SEPT.13/61		400	60	2488	1106	1382	-	-			
		JUNE 7/62		60,000	430	7636	6184	1452	-	-			
		AUG.1/62		38,000	95	1086	440	646	-	-			
		SEPT.11/62		400,000	1050	9870	7118	2752	-	-			
		JAN.8/63		200	85	-	-	-	-	-			
		FEB.19/63		-	170	1832	189	1643	-	35			
		SEPT.6/63		11,000	5.3	506	20	486	-	5		0.0	0.46

TABLE 1-10

OUTFALL TABULATION AND ANALYTICAL RESULTS

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML I.N.	COLIFORMS PER 100 ML M.F.	5-DAY B.O.D.	SOLIDS TOTAL	SOLIDS SUSP.	SOLIDS DISS.	TURBIDITY	PHENOLS (PPB)
CR-24.4	CREDIT RIVER AT RIVER DRIVE	SEPT.13/61		200	1.1	248	-	-	1.	
		JUNE 7/62		2,000	1.5	304	-	-	4.5	
		SEPT.11/62		3,000	1.8	298	-	-	6.	
		JAN.8/63		2,900	5.2	-	-	-	-	
		FEB.19/63		-	3.1	-	-	-	-	
		MAY 1/63		8,000	1.6	302	40	262	-	
		SEPT.6/63		82	0.7	292	2	290	-	5